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EXAMINER	
TRUONG, THANHNGA B	

ART UNIT	PAPER NUMBER
2135	

DATE MAILED: 03/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/864,017	VANTTINEN ET AL.	
	Examiner	Art Unit	
	Thanhnga B. Truong	2135	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 May 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 May 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10/1;2/6;9/29;10/7*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claim 33-34 are rejected under 35 U.S.C. 102(e) as being anticipated by Jokiaho et al (US 5,889,770).

a. *Referring to claim 33:*

i. Jokiaho teaches:

(1) means for receiving a notification from a cellular network about a location information request, means for responding to the cellular network with a notification response, and means for notifying a packet data device, which is either an integral part of the mobile station or attached to the mobile station, about the location information request **[i.e., the extra signalling caused by location updating can be diminished by providing the data packets arriving at the data service center from a mobile station with the identifier of the cell or group of cells from which the mobile station transmitted them. The data service center compares the identifier of the cell or group of cells contained by the received data packet with a previous identifier stored in the data service database, and if it notices that the identifier has changed, it updates the location data of the mobile station in the database with the new identifier. This procedure makes it possible to significantly diminish or even entirely avoid the signalling relating to location updating during packet data transmission. The mobile station itself or the mobile communication network may insert the required identifier in a data packet before**

the data packet is transmitted to the data service center (column 3, lines 57-67 through column 4, lines 1-5)].

b. *Referring to claim 34:*

i. Jokiaho further teaches:

(1) wherein the means for responding to the cellular network are arranged to be initiated by a permission sent by the packet data device **[i.e., the purpose of the data service center AGENT is to provide advanced services without overloading the capacity of the mobile services switching center MSC or the base station controller BSC. The transmission of packets to and from the data service center is carried out in a transparent manner. The mobile services switching center MSC and the base station controller BSC route the packet data without handling it any further. The packets are opened and handled in the data service center only (column 5, lines 28-35)].**

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-5, 7, 9-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Havinis et al (US 6,671,377 B1), and further in view of Jokiaho et al (US 5,889,770).

a. *Referring to claim 1:*

i. Havinis teaches:

(1) a first network element, which is connected to the cellular network, receiving (401) a location information request (201) relating to the mobile station from a second network element, which is connected to a packet data network **[i.e., referring to Figure 3, when a positioning request 285 for a particular target Mobile Station (MS) 20 is received by a Serving Mobile Location Center**

(SMLC) 270 serving a cell 22 within the Public Land Mobile Network (PLMN) 10 that the MS 300 is currently located in, the SMLC 270 must choose the optimum positioning method available (column 4, lines 30-47)],

(2) requesting (404) from a third network element, which is connected to the packet data network, a security document relating to the second network element **[i.e., referring to Figure 4, when an MS 20 needs to obtain network information 210 in order to position itself, the MS 20 can send a mobile originating request for assistance data 215, which requests from the network 10 a location deciphering key K.sub.L and includes a positioning indication 218 that indicates to the network 10 the number and/or duration of the positionings that the MS 20 will be performing, to the MSC 14 (column 5, lines 37-44)],**

(3) initiating the establishment (406) of at least one security association, which security association specifies at least data origin authentication and points from the second network element to the first network element and which establishment involves use of information comprised in the security document **[i.e., in response to the request for assistance data 215, the MSC 14 sends a Security-Related_Information_Request 219, which includes the positioning indication 218, to a Home Location Register (HLR) 26 associated with the MS 20. The HLR 26 preferably has an Authentication Center (AuC) 27 attached thereto. The AuC 27 fetches a subscriber identification key K.sub.i stored within a subscriber record 29 associated with the MS 20 from the HLR 26 and uses this identification key K.sub.i together with a non-predictable random number RAND and the positioning indication 218, which indicates the number of positioning requests, as an input to a ciphering algorithm 28, which corresponds to the deciphering algorithm 255 supported by the MS 20, to derive the location deciphering key K.sub.L. The location deciphering key K.sub.L is sent back to the MSC 14 for use, by the BSC 23, in encrypting the network information 210. This encrypted network information 320 is transmitted to the MS 20 over, for example, a Broadcast Control Channel (BCCH) 21 (column 5, lines 45-62)],**

(4) after successful establishment of said security association, authenticating (408) the data origin of the location service request, and if the data origin of the location service request is authenticated successfully, initiating (410) a location procedure relating to the mobile station in the cellular network **[i.e., with reference now to FIG. 4B of the drawings, on the MS 20 side, in order to use the broadcasted network information 210, e.g., BTS 24 coordinates, the MS 20 must decipher the received encrypted network information 210. The MS 20 has stored in a non-volatile memory, such as a Random Access Memory (RAM) 245, within a smart card, such as a Subscriber Identity Module (SIM) card 250, the subscriber identification key K.sub.i, the algorithm 255 for deciphering the network information 210, which was previously sent to the MSC 14 in the CLASSMARK UPDATE message 200, and the positioning indication 218, which includes the number and/or duration of positionings requested by the MS 20 in the request for assistance data message 215. In addition, the MSC 14 broadcasts unencrypted the random number RAND, which was used by the MSC 14 in deriving the location deciphering key K.sub.L. The random number RAND and the encrypted network information 210 are received by a transceiver (TRX) unit 240 within the MS 20 and transferred over interface I/f-a to a deciphering module 260 within the MS 20. The deciphering module 260 accesses the memory 245 over interface I/f-d and retrieves the subscriber identification key K.sub.i, the algorithm 255 for deciphering the network information 210 and the positioning indication 218, and inputs the subscriber identification key K.sub.i, the positioning indication 218 and the random number RAND into the deciphering algorithm 255 to produce the location deciphering key K.sub.L. The deciphering module 260 uses this location deciphering key K.sub.L to decipher the received network information 210. Once the deciphering module 260 deciphers the received network information 210, this deciphered network information 210 is stored in the memory 245 in the SIM card 250 for later use in calculating the MS 20 location. Specifically, the location calculation within the MS 20 can be carried out by utilizing a Positioning Measurement Module (PMM) 220 within the MS 20 for performing positioning**

measurements 222 with the aid of the deciphered network information 210, which is sent over interface I/f-b from the deciphering module 260, and an algorithm 225 specific to the positioning method used. When the PMM 220 obtains the positioning measurements 222, the PMM 220 sends the positioning measurements 222 to a Location Calculation Module (LCM) 230 within the SIM card 250, over interface I/f-c. Thereafter, the LCM 230 converts the positioning measurements 222 to location information 298, e.g., X,Y coordinates, with the aid of the stored network information 210 in memory 245 and an algorithm 235 for performing the conversion (column 5, lines 63-67 through column 6, lines 1-42)].

ii. Although Havinis is silent about the mobile network connects to a packet data network, Jokiaho teaches:

(1) The mobile station MS using the packet data service monitors the control channels of the mobile communication network and makes an independent decision on location updating. An algorithm especially intended for the location updating of the data service is used in the decision-making. This algorithm can be based for instance on the level of a signal received by the mobile station, the quality of a signal (for instance the bit error rate), other corresponding criteria or the different combinations thereof. In order to prevent back-and-forth location updatings between two cells in their boundary area, the criteria used in decision-making are determined in such a manner that there is hysteresis in the boundary areas of the cells during location updating, i.e. the location updating criteria from a cell to another are different in one direction than in the opposite direction. The location updating can alternatively be carried out every time the mobile station MS performs a cell crossover or handover in the mobile communication network according to the normal procedures of the mobile communication network. If a mobile station has data to be transmitted when it is crossing a cell boundary, the mobile station transmits a normal information packet after the connection with the new cell has been established. The data packets transmitted between the mobile station MS and the packet service center AGENT 19 consist of a mobile station identifier MS ID, a possible control information field CONTROL, and a data field DATA, as illustrated in FIG. 5. If the data service center is connected with a

mobile services switching center MSC, as the data service center AGENT 19, the base station system, usually the base station controller BSC, adds to the data packet, such as shown in FIG. 5, received from the mobile station MS the cell identifier of the cell from which the data packet was received, and forwards the resulting data packet, such as shown in FIG. 4, to the data service center AGENT 19. Correspondingly, when the data service center, such as the AGENT 19', is connected with a base station controller, the base station controller provides the data packet to be transmitted to the data service center with the cell identifier CELL ID of the cell from which the packet was received. If the packet service center is connected directly to a base station BTS, as AGENT 19 by the dashed line 21, the situation may be slightly different. In this case, the mobile station MS provides the data packet with a cell identifier CELL ID and transmits the data packet according to FIG. 4. The mobile station is informed of which base station it is registered in by system information transmitted on common downlink control channels. When the data service center AGENT 19 receives the data packet according to FIG. 4, it compares the cell information CELL ID contained by the data packet with the location data of the mobile station MS stored in the data service database 22, this location data also being a cell identifier CELL ID. If the received cell identifier is different, the data service center updates the location data of the mobile station MS in the database 22 with this new cell identifier. With this updating method based on the cell identifier in a data packet, it is possible to avoid the transmission of separate updating control messages and thus to save frequency band on the radio interface as well as the data processing capacity required by the data service center AGENT 19 **(column 8, lines 27-67 through column 9, lines 1-20).**

iii. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to:

(1) have applied Jokiaho's teaching of the packet data service monitor for tracking the location data of the mobile station within Havinis' mobile communication network in order to maintain and update location data of the mobile station in the data service database with an accuracy of one cell or group of cells, and transmit data packets and messages to the mobile station only via the cell or group of

cells indicated by the location data contained in the data service user database **(column 2, lines 58-64 of Jokiaho).**

iv. The ordinary skilled person would have been motivated to:

(1) have applied Jokiaho's teaching of the packet data service monitor for tracking the location data of the mobile station within Havinis' mobile communication network to provide separate location management and location updating for packet data transmission in addition to the normal location management and location area configuration of a mobile communication system **(column 3, lines 20-24 of Jokiaho).**

b. *Referring to claim 2:*

i. Havinis teaches:

(1) wherein the security document relating to the second network element is a public key certificate, which comprises an identifier specifying the second network element and a public key of the second network element and which is cryptographically signed by the third network element **[i.e., in response to the request for assistance data 215, the MSC 14 sends a Security-Related_Information_Request 219, which includes the positioning indication 218, to a Home Location Register (HLR) 26 associated with the MS 20. The HLR 26 preferably has an Authentication Center (AuC) 27 attached thereto. The AuC 27 fetches a subscriber identification key K.sub.i stored within a subscriber record 29 associated with the MS 20 from the HLR 26 and uses this identification key K.sub.i together with a non-predictable random number RAND and the positioning indication 218, which indicates the number of positioning requests, as an input to a ciphering algorithm 28, which corresponds to the deciphering algorithm 255 supported by the MS 20, to derive the location deciphering key K.sub.L. The location deciphering key K.sub.L is sent back to the MSC 14 for use, by the BSC 23, in encrypting the network information 210. This encrypted network information 320 is transmitted to the MS 20 over, for example, a Broadcast Control Channel (BCCH) 21 (column 5, lines 45-62)].**

c. *Referring to claims 3-5, and 7:*

i. These claims have limitations that is similar to those of claims 1 and 2, thus they are rejected with the same rationale applied against claims 1 and 2 above.

d. *Referring to claim 9:*

i. This claim has limitations that is similar to those of claim 1, thus it is rejected with the same rationale applied against claim 1 above.

e. *Referring to claim 10:*

i. Havinis further teaches:

(1) transmitting (707, 713) location information relating to the mobile station to the second network element **[i.e., once the LCM 230 completes the location calculation process, the LCM 230 can transmit the calculated location information 298, which can be, for example, a single MS 20 location 298, the MS 20 location 298 over a certain period of time or a certain number of calculated MS 20 locations 298, to the requesting LA 280 by passing the location information 298 to either the TRX unit 240 over interface I/f-e for transmission to an LA 280 within the network 10 or to an internal LA 280 over interface I/f-f. In addition, it should be understood that the SIM card 250 preferably contains a central processing unit (CPU) 258 for controlling the flow of information between the PMM 220, LCM 230, RAM 245, deciphering module 260, comparison module 265, TRX unit 240 and any internal LA 280 (column 6, lines 54-67)].**

f. *Referring to claims 11, 14:*

i. These claims have limitations that is similar to those of claim 10, thus they are rejected with the same rationale applied against claim 10 above.

g. *Referring to claim 12:*

i. This claim has limitations that is similar to those of claims 1 and 7, thus it is rejected with the same rationale applied against claims 1 and 7 above.

h. *Referring to claims 13, 15-16:*

i. These claims have limitations that is similar to those of claims 1 and 10, thus they are rejected with the same rationale applied against claims 1 and 10 above.

i. *Referring to claim 17:*

i. Jokiaho further teaches:

(1) the mobile station receiving (702) a notification relating to the location procedure relating to the mobile station, and the mobile station informing (703) said packet data device about the notification **[i.e., with reference to FIG. 3, when the mobile station using the data service travels the route from location A to location B as shown in FIG. 2, it performs location updatings I-VII shown in FIG. 3 into the database 22 of the data service center during every cell crossover in addition to performing the normal location updatings of FIG. 2. When data packets or paging messages relating to packet data transmission are transmitted to the mobile station MS in the downlink direction (mobile station MS-terminating transmissions), they are only transmitted in the cell indicated by the location data contained by the database 22 instead of the entire location area LA1 or LA2. If the mobile station MS is not using the packet data service, only the normal location updating according to FIG. 2 is performed on it on route A-B (column 7, lines 25-38). Furthermore, location updating information is transmitted to the service center AGENT 19 every time the mobile station MS crosses the boundary between two cells. In the preferred embodiment of the invention, the location information in the database 22 of the data service is based on the accuracy of one cell, i.e. the smallest geographical area possible. This is a way of decreasing the number of packets transmitted unnecessarily to the cells. The mobile station MS is registered in the direction of the service center AGENT 19 by transmitting a location updating control packet. In this packet, the mobile station MS transmits its identifier, and the control field indicates to the service center 19 an incoming control packet. The relaying mobile communication network element, such as a base station controller BSC, adds to the location updating control packet the identifier of the cell from which the packet was received, and transmits the packet further to the service center AGENT 19. AGENT 19 uses this cell identifier for location updating purposes by comparing it with the current location data of the mobile station MS in the database 22 and by**

updating the location data of the mobile station MS in the database 22 if the received identifier and the stored identifier differ from each other. The mobile station MS recognizes the need for a cell crossover by monitoring the broadcast carrier of the cell. In present-day cellular systems, such as the GSM, a common channel exists for transmitting control information to mobile stations. By monitoring this channel, the mobile station MS is able to decide on the necessity for a cell crossover (column 7, lines 61-67 through column 8, lines 1-21)].

ii. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to:

(1) have applied Jokiaho's teaching of the packet data service monitor for tracking the location data of the mobile station within Havinis' mobile communication network in order to maintain and update location data of the mobile station in the data service database with an accuracy of one cell or group of cells, and transmit data packets and messages to the mobile station only via the cell or group of cells indicated by the location data contained in the data service user database **(column 2, lines 58-64 of Jokiaho).**

iii. The ordinary skilled person would have been motivated to:

(1) have applied Jokiaho's teaching of the packet data service monitor for tracking the location data of the mobile station within Havinis' mobile communication network to provide separate location management and location updating for packet data transmission in addition to the normal location management and location area configuration of a mobile communication system **(column 3, lines 20-24 of Jokiaho).**

j. *Referring to claims 18-20:*

i. Havinis further teaches:

(1) wherein the first network element is a network element of a GPRS network; a Gateway Mobile Location Center; or a UMTS network **[i.e., referring to Figure 3, element 290, a Gateway Mobile Location Center (GMLC) or other types of compatible mobile network].**

k. *Referring to claims 21-23:*

i. These claims consist a network element (900) of a cellular network to implement claim 1 and is rejected by the same prior art of record.

l. *Referring to claims 24-26:*

i. These claims have limitations that is similar to those of claims 18-20, thus they are rejected with the same rationale applied against claims 18-20 above.

5. Claims 6, 8, 27-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Havinis et al (US 6,671,377 B1), further in view of Jokiaho et al (US 5,889,770), and further in view of Barnes et al (US 6,711,147 B1).

a. *Referring to claim 6:*

i. Though the combination of teaching between Havinis/Jokiaho teaches the claimed subject matter, they do not explicitly mention the security association as a set of Internet Security Associations. However, on the other hand, Barnes teaches:

(1) Mobile IP has a process called "IP Security." IP security is a tunneling security context between a pair of nodes. For example, IP Security may use a Security Parameters Index for identifying a security context between a pair of nodes among the contexts available in the mobility security association, which is the internet security association **(column 4, lines 13-18)**. Furthermore, a GPRS network may include a first base station for providing wireless access to a mobile node, a GPRS support node (GSN) connected to the base station, and a security gateway for connecting the GPRS network to a second network that may use the mobile internet protocol **(column 4, lines 31-35).**

ii. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to:

(1) include the security association within the mobile communication network, especially the mobile IP/packet data network to easily track the location of the mobile station

iii. The ordinary skilled person would have been motivated to:

(1) include the security association within the mobile communication network, especially the mobile IP/packet data network so that a mobile node may seamlessly roam between a wireless network and a mobile IP network and that the location calculation of a mobile station can be performed.

b. *Referring to claim 8:*

i. This claim has limitations that is similar to those of claim 6, thus it is rejected with the same rationale applied against claim 6 above.

c. *Referring to claim 27:*

i. Havinis further teaches:

(1) means (960) for receiving information about a location information request and about a sender of a location information request from the mobile station **[i.e., referring to Figure 3, when a positioning request 285 for a particular target Mobile Station (MS) 20 is received by a Serving Mobile Location Center (SMLC) 270 serving a cell 22 within the Public Land Mobile Network (PLMN) 10 that the MS 300 is currently located in, the SMLC 270 must choose the optimum positioning method available (column 4, lines 30-47)]** and

(2) means (970) for exchanging with a network element connected to a cellular network information about a security association, which points to the network element from the sender of the location information request **[i.e., referring to Figure 4, when an MS 20 needs to obtain network information 210 in order to position itself, the MS 20 can send a mobile originating request for assistance data 215, which requests from the network 10 a location deciphering key K.sub.L and includes a positioning indication 218 that indicates to the network 10 the number and/or duration of the positionings that the MS 20 will be performing, to the MSC 14. In response to the request for assistance data 215, the MSC 14 sends a Security-Related_Information_Request 219, which includes the positioning indication 218, to a Home Location Register (HLR) 26 associated with the MS 20. The HLR 26 preferably has an Authentication Center (AuC) 27 attached thereto. The AuC 27 fetches a subscriber identification key K.sub.i stored within a subscriber record 29 associated with the MS 20 from the HLR 26 and uses this**

identification key K.sub.i together with a non-predictable random number RAND **and the positioning indication 218, which indicates the number of positioning requests, as an input to a ciphering algorithm 28, which corresponds to the deciphering algorithm 255 supported by the MS 20, to derive the location deciphering key K.sub.L. The location deciphering key K.sub.L is sent back to the MSC 14 for use, by the BSC 23, in encrypting the network information 210. This encrypted network information 320 is transmitted to the MS 20 over, for example, a Broadcast Control Channel (BCCH) 21 (column 5, lines 37-62)].**

ii. Although Havinis is silent about the mobile network connects to a packet data network, Jokiaho teaches:

(1) The mobile station MS using the packet data service monitors the control channels of the mobile communication network and makes an independent decision on location updating. An algorithm especially intended for the location updating of the data service is used in the decision-making. This algorithm can be based for instance on the level of a signal received by the mobile station, the quality of a signal (for instance the bit error rate), other corresponding criteria or the different combinations thereof. In order to prevent back-and-forth location updatings between two cells in their boundary area, the criteria used in decision-making are determined in such a manner that there is hysteresis in the boundary areas of the cells during location updating, i.e. the location updating criteria from a cell to another are different in one direction than in the opposite direction. The location updating can alternatively be carried out every time the mobile station MS performs a cell crossover or handover in the mobile communication network according to the normal procedures of the mobile communication network. If a mobile station has data to be transmitted when it is crossing a cell boundary, the mobile station transmits a normal information packet after the connection with the new cell has been established. The data packets transmitted between the mobile station MS and the packet service center AGENT 19 consist of a mobile station identifier MS ID, a possible control information field CONTROL, and a data field DATA, as illustrated in FIG. 5. If the data service center is connected with a mobile services switching center MSC, as the data service center AGENT 19, the base

station system, usually the base station controller BSC, adds to the data packet, such as shown in FIG. 5, received from the mobile station MS the cell identifier of the cell from which the data packet was received, and forwards the resulting data packet, such as shown in FIG. 4, to the data service center AGENT 19. Correspondingly, when the data service center, such as the AGENT 19', is connected with a base station controller, the base station controller provides the data packet to be transmitted to the data service center with the cell identifier CELL ID of the cell from which the packet was received. If the packet service center is connected directly to a base station BTS, as AGENT 19 by the dashed line 21, the situation may be slightly different. In this case, the mobile station MS provides the data packet with a cell identifier CELL ID and transmits the data packet according to FIG. 4. The mobile station is informed of which base station it is registered in by system information transmitted on common downlink control channels. When the data service center AGENT 19 receives the data packet according to FIG. 4, it compares the cell information CELL ID contained by the data packet with the location data of the mobile station MS stored in the data service database 22, this location data also being a cell identifier CELL ID. If the received cell identifier is different, the data service center updates the location data of the mobile station MS in the database 22 with this new cell identifier. With this updating method based on the cell identifier in a data packet, it is possible to avoid the transmission of separate updating control messages and thus to save frequency band on the radio interface as well as the data processing capacity required by the data service center AGENT 19 **(column 8, lines 27-67 through column 9, lines 1-20).**

iii. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to:

(1) have applied Jokiaho's teaching of the packet data service monitor for tracking the location data of the mobile station within Havinis' mobile communication network in order to maintain and update location data of the mobile station in the data service database with an accuracy of one cell or group of cells, and transmit data packets and messages to the mobile station only via the cell or group of

cells indicated by the location data contained in the data service user database **(column 2, lines 58-64 of Jokiaho).**

iv. The ordinary skilled person would have been motivated to:

(1) have applied Jokiaho's teaching of the packet data service monitor for tracking the location data of the mobile station within Havinis' mobile communication network to provide separate location management and location updating for packet data transmission in addition to the normal location management and location area configuration of a mobile communication system **(column 3, lines 20-24 of Jokiaho).**

v. Though the combination of teaching between Havinis/Jokiaho teaches the claimed subject matter, they do not explicitly mention the security association as a set of Internet Security Associations. However, on the other hand, Barnes teaches:

(1) Mobile IP has a process called "IP Security." IP security is a tunneling security context between a pair of nodes. For example, IP Security may use a Security Parameters Index for identifying a security context between a pair of nodes among the contexts available in the mobility security association, which is the internet security association **(column 4, lines 13-18)**. Furthermore, a GPRS network may include a first base station for providing wireless access to a mobile node, a GPRS support node (GSN) connected to the base station, and a security gateway for connecting the GPRS network to a second network that may use the mobile internet protocol **(column 4, lines 31-35).**

vi. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to:

(1) include the security association within the mobile communication network, especially the mobile IP/packet data network to easily track the location of the mobile station

vii. The ordinary skilled person would have been motivated to:

(1) include the security association within the mobile communication network, especially the mobile IP/packet data network so that a mobile

node may seamlessly roam between a wireless network and a mobile IP network and that the location calculation of a mobile station can be performed.

d. *Referring to claims 28-30:*

i. These claims consist a a packet data device (950) being an integral part of a mobile station with related to security associaton to implement claim 27 and are rejected by the same prior art of record.

e. *Referring to claim 31:*

i. Havinis further teaches:

(1) further comprising means for locating itself **[i.e., Thus, if the MS 20 has terminal-based positioning capabilities, along with terminal-based location calculation abilities, when the SMLC 270 receives the positioning request 285, the SMLC 270 can opt to allow the MS 20 to both obtain positioning measurements and to calculate it's own location based upon those positioning measurements (column 5, lines 20-27. In addition, As shown in FIG. 4A of the drawings, when an MS 20 performs its own location calculation, the MS 20 does not need to involve the network 10 in the positioning process except to obtain access to network information 210, e.g., BTS 24 coordinate information, for each positioning or for a period of continuous positioning. Thus, when an MS 20 needs to obtain network information 210 in order to position itself, the MS 20 can send a mobile originating request for assistance data 215, which requests from the network 10 a location deciphering key K.sub.L and includes a positioning indication 218 that indicates to the network 10 the number and/or duration of the positioning that the MS 20 will be performing, to the MSC 14 (column 5, lines 31-44)].**

f. *Referring to claim 32:*

i. Havinis further teaches:

(1) comprising a Global Positioning System receiver **[i.e., multiple reference GPS receivers 700 and 705 are spaced throughout the PLMN 10 in order to provide accurate assistance GPS data to GPS receivers 710 within or attached to MS's 20 (column 8, lines 58-61)].**

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Huusko et al (US 6, 397, 065 B1) discloses a cellular radio access network and a location updating in a cordless communications system, in a cellular radio access network (1), which is connected to one or more core networks (2, 3, 4, 5) or services (SP2 to SP5), each of them having a dedicated mobility management (see abstract).

b. De Vaney (US 5, 548, 816) discloses a method and system for identifying the location of mobile units within a cellular telephone system (see abstract).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanhnga (Tanya) Truong whose telephone number is 571-272-3858.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim Vu can be reached at 571-272-3859. The fax and phone numbers for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-2100.

TBT
March 7, 2005

KIM VU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100